Information Brief on Green Power Marketing

Third Edition

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Executive Summary

Utility Green Pricing Programs

- More than 30 utilities have either developed or have announced intentions to develop green pricing programs for their customers. Most utility programs have resulted in new renewable energy project development. Utilities with established programs note high customer retention rates, indicating high rates of customer satisfaction. Some utilities have expanded the size of their programs because of continued positive customer response.

- Actual or proposed price premiums for energy-based green pricing offerings generally range from 2.0¢/kilowatt-hour (kWh) to 3.0¢/kWh but can be as low as 0.5¢/kWh and as high as 6.0¢/kWh.

- New renewable energy capacity developed under green pricing programs is expected to reach more than 20 MW during 1998 and more than 35 MW by the end of 1999.

- The majority of green pricing options have been offered to residential and small commercial customers. Only a handful of utilities are attempting to market green power to larger wholesale or industrial customers.

- Customer participation in utility green pricing programs has been as high as 3% in Traverse City, MI and Moorhead, MN but is generally around 1% to 2% or less. The low overall participation rates can be attributed to any number of factors, including the experimental nature of many programs for which capacity and subscription limits are imposed, the narrow scope of most green pricing offerings, and inadequate corporate and marketing commitments.

- Utilities are now designing programs to better reflect the types of services that might be offered to customers in a competitive market, such as programs that allow customers to purchase blocks of renewable energy to meet up to 100% of their electricity needs.

Competitive Green Power Marketing

- Several companies are selling green power in the California retail market, with other companies active in the wholesale market. These companies generally offer multiple products, containing anywhere from 20% to 100% "eligible"[1] renewable power with the remaining power coming from large hydro, natural gas, or system power.

- Most green power marketers are, by necessity, selling power from existing geothermal, small hydro, and biomass projects, but plan to add new renewable resources in the future.

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1 Under the definition established in California's electric industry restructuring law (AB 1890), eligible renewables may include solar, wind, geothermal, solid fuel biomass, whole waste tire combustion, municipal solid waste, landfill gas, and hydropower with a generating capacity of 30 megawatts or less.

- The prices of most California green power products are pegged to the Power Exchange (PX) price, ranging from the actual PX price to the PX price plus 3.0¢/kWh. Some marketers also charge a small monthly fee to cover marketing and administrative expenses.[2]

- As of August 31, 1998, less than 100,000 utility customers in California had requested to switch to new electricity suppliers, representing about 1% of the state's total customers and 8.6% of the state's electricity load.[3] More than 60% of the switch requests have come from residential customers. Although there is no hard information on how many customers have switched to green power suppliers, there is little price competition among suppliers and green power is the only differentiated electricity product available in the market.

- Outside of California, A*ll*Energy Marketing Company has introduced the first green power product for New England's competitive power markets. Through *All*Energy, customers can purchase blocks of green power that will be initially supplied by landfill gas. And in Pennsylvania, green power products that contain at least 50% renewable energy content are being marketed by Conectiv Energy and Green Mountain Energy Resources. Beginning January 1, 1999, two-thirds of Pennsylvania's electricity customers will be able to choose their supplier, with the remaining one-third eligible to participate in 2000.

- It appears that between 15% and 30% of residential customers participating in retail access pilot programs have chosen to purchase green power, containing varying amounts of renewable energy, where this option has been available. However, just as the experience with utility programs may underestimate actual green power demand, the retail pilot experience may overstate future response to competitive green power offerings because those customers most predisposed toward green purchasing may also be the most inclined to participate in the pilot programs. Also, pilot program participants are usually guaranteed some level of price savings, which helps offset the higher price of the green power options; similar price savings might not be available initially to all customers during the transition to competitive markets.

- Several additional pilot programs have begun or are scheduled to begin during 1998 in the Pacific Northwest. Some of these pilots are using a portfolio approach, in which customers are offered different service options through the utility, rather than allowing alternative suppliers to service customers directly. All of the Northwest pilots will include green power options.

- Three high-profile business and government customers have committed to purchase green power in California: Toyota Motor Sales signed an agreement to power several facilities with 100% renewable energy; Patagonia will power its 14 California-based facilities with 100% wind energy; and Santa Monica became the first city in California to officially commit to renewable energy to power City Hall and other city facilities.

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2 Lawrence Berkeley National Laboratory prepares a summary of California retail green power products that can be viewed at *http://www.eren.doe.gov/greenpower/california/lbl_table.html*. For more information, contact Ryan Wiser at (510) 486-5474 or *rhwiser@lbl.gov*.

3 The low switch rate has been attributed to the lack of price competition in the California market. See R. Wiser, et. al., *Green Power Marketing in Retail Competition: An Early Assessment*, a joint NREL/LBL publication, forthcoming. Data on customer switching comes from the California Public Utilities Commission. For more information, see *http://www.cpuc.ca.gov/divisions/energy/Direct_Access/direct_main_page.htm*.

Introduction

The essence of green power marketing is to provide market-based choices for electricity consumers to purchase power from environmentally preferred sources. Green power marketing has the potential to expand domestic markets for renewable energy technologies by fostering greater availability of renewable electric service options in retail markets. Although renewable energy development has traditionally been limited by cost considerations, customer choice allows consumer preferences for cleaner energy sources to be reflected in market transactions. In survey after survey, customers have expressed a preference and willingness to pay more, if necessary, for cleaner energy sources.

Green pricing is an optional utility service that allows customers an opportunity to support a greater level of utility company investment in renewable energy technologies. Participating customers pay a premium on their electric bill to cover the incremental cost of the additional renewable energy. Many utilities are offering green pricing to build customer loyalty and expand business lines and expertise in advance of electric market competition. To date, more than 30 utilities have either implemented or announced plans to offer a green pricing option.

The more general concept of *green power marketing* refers to the selling of green power in the competitive marketplace, in which multiple suppliers and service offerings exist. Retail access pilot programs provide limited opportunities for power marketers and customer aggregators to test green power offerings in competitive markets. Indications from some pilot programs are that the potential demand for green power products and services in a more competitive electric marketplace is very large. In a Massachusetts pilot, nearly one-third of residential participants chose an "environmentally preferable" service provider, and in New Hampshire, 37% of customer participants polled said they were either "strongly influenced" or "moderately influenced" by the environmental message or image of their chosen supplier.

Beyond these experimental programs, electricity markets are now open to competition in California, Massachusetts, and Rhode Island, and will soon be in Pennsylvania.[4] Several green power marketers, offering green products and services to residential, commercial, and wholesale customers, are active in California and green power products have also been introduced in New England and Pennsylvania.

Even the limited experience with green power marketing has highlighted a number of important market needs, such as verifying "green" power claims and educating and informing customers about environmentally preferable competitive market choices. A number of activities are already underway to help address product credibility, such as green power certification and the development of advertising and marketing guidelines.

This document is the third in a series of information briefs on green power marketing activity in the United States. It includes descriptive information on utility green pricing programs, competitive green power marketing activity, retail access pilot programs, and other relevant data and information.

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4 As of September 1, 1998, 18 states had either enacted legislation on electric restructuring or had issued comprehensive regulatory orders under which all customers will be allowed to choose an electricity supplier. However, the effective dates for customer choice differ widely. Regularly updated information on state electricity restructuring activities is available from the U.S. Energy Information Administration at *http://www.eia.doe.gov*.

Utility Green Pricing Programs

Green pricing is an optional utility service that allows customers an opportunity to support a greater level of utility company investment in renewable energy technologies. Participating customers pay a premium on their electric bill to cover the incremental cost of the additional renewable energy. To date, more than 30 utilities have developed or have announced intentions to develop green pricing programs for their customers:

Investor-Owned Utilities	Publicly Owned Utilities
Arizona Public Service	**City of Alameda**
Central and South West	Austin Energy
Detroit Edison	Colorado Springs Utilities
Florida Power and Light	Fort Collins Light & Power
Gulf Power Company	Gainesville Regional Utilities
Hawaiian Electric Company	Lincoln Electric System
Indianapolis Power and Light	**Los Angeles Dept. of Water and Power**
Madison Gas & Electric	**Moorhead Public Service**
Nevada Power Company	Sacramento Municipal Utility District
New York State Electric and Gas	**Salt River Project**
Northern States Power	City of Tallahassee
Portland General Electric*	Traverse City Light and Power
Public Service Company of Colorado	
Southwestern Public Service	Rural Electric Cooperatives
West Texas Utilities	Cooperative Power
Western Resources	Dakota Electric Association
Wisconsin Electric Power Company	Holy Cross Electric Association
Wisconsin Public Service Corporation	**Tri-State G&T**
	United Power Association
Federal	
Bonneville Power Administration	
Tennessee Valley Authority	

Bold type denotes new program since last update
*Program inactive

Types of Green Pricing Programs

There are three basic types of green pricing programs, which are described further below. One of the main differences in program types is the ability of customers to substitute some amount of green power for the utility's standard resource mix.

Contribution program—Customers can contribute to a utility-managed fund for renewable project development; the projects developed are unrelated to the customer's electricity usage. All of the projects developed under contribution programs have used photovoltaics (PV) and have been relatively small, with the exception of the Sacramento Municipal Utility District, which has developed a total of 1.5 megawatts (MW) of PV since 1993 through its PV Pioneers green pricing program.

Capacity-based program—Customers can choose to purchase a fixed block of their electric capacity requirements from renewables. To date, capacity-based programs have offered PV exclusively, in rooftop or localized applications. Monthly premiums range from $2.50 to $6.59 per 100 watts of capacity. Generally, the capacity blocks subscribed are well below the capacity required to service the customer's total electricity usage.

Energy-based program—Customers can choose to purchase a fixed block or percentage of their electric energy requirements from renewables. In many of these programs, a customer can choose to purchase 100% of its electricity as green power. This type of program generally offers renewable energy sources that are most competitive with bulk power generation; 16 of the 19 energy-based programs that are either already underway or planned will use wind power. Actual or proposed price premiums vary from about 0.5¢/kilowatt-hour (kWh) to as much as 6.0¢/kWh.

Tables 1–3 provide summary data on utility programs for which information is available.

Table 1 — Green Pricing Contribution Programs

Utility	Technology	Size	Inception Date	Notes
Florida Power and Light	PV	10 kW	1997	Utility site
Gainesville Regional Utilities	PV	10 kW	1993	Demonstration project on utility property
Gulf Power	PV	N/A	1996	Schools-based projects
Hawaiian Electric	PV	20 kW	1996	Schools-based projects
Public Service Company of Colorado	PV	40 kW	1993	Several small off-grid projects
Nevada Power Company	PV	40 kW	1998	Two 20-kW systems
New York State Electric and Gas	PV	ë10 kW	1996	Limited number of residential rooftop systems
Sacramento Municipal Utility District	PV	1,500 kW	1993 1997	PV Pioneers Community-based systems
City of Tallahassee	PV	10 kW	1997	Public building
Wisconsin Public Service	PV PV	36 kW small	1996 1998	Schools-based projects Small systems for public areas

Table 2 — Capacity-Based Green Pricing Programs

Utility	Size	Premium	Inception Date	Notes
Arizona Public Service	82 kW 82 kW	$3.00/100 watts	1996	Centralized projects on utility property
Austin Energy	32 kW	$3.50/50 watts	1997	Several commercial-scale projects, depending on customer response
Detroit Edison	28.4 kW 26.4 kW	$6.59/100 watts	1996	Two centralized projects on utility property; other projects are being planned
Northern States Power	34 kW	$2.50/100 watts	1996	seventeen, 2-kW residential systems
Salt River Project	100 kW	$3.00/100 watts	1998	Centralized project at utility power plant

Table 3 — Energy-Based Green Pricing Programs

Utility	Technology	Size	Premium	Inception Date	Notes
Bonneville Power Administration	Wind/ Geothermal	N/A	1.0¢/kWh	1995	Tariff for larger customers
Colorado Springs Utilities	Wind	0.5 MW	3.0¢/kWh	1997	Wholesale purchase from Public Service Co. of Colorado
Cooperative Power	Wind	2.0 MW	2.0¢/kWh	1997	Contracting from new project for distribution co-ops
Dakota Electric Association	Wind	0.8 MW	2.0¢/kWh	1997	Wholesale purchase from Cooperative Power
Fort Collins Light and Power	Wind	1.2 MW	2.0¢/kWh	1996	Two 600-kW turbines operational
Holy Cross Energy	Wind	2.75 MW	2.5¢/kWh	1997	Wholesale purchase from Public Service Co. of Colorado
Indianapolis Power and Light	Geothermal	—	0.9¢/kWh	1997	Power purchase from Enron
Lincoln Electric System	Wind	660 kW	<6.0¢/kWh	1998	New project
Madison Gas and Electric	Wind	11.25 MW	4–5¢/kWh	1997	New project; regulatory filing pending
Moorhead Public Service	Wind	750 kW	0.5¢/kWh	1998	New project
Portland General Electric	Wind	5.0 MW	1.0¢/kWh	1996	Tariff for larger customers (currently inactive)
Public Service Company of Colorado	Wind	13.3 MW	2.5¢/kWh	1997	10 MW commitmentin Phase 1; expanded due to high response
Sacramento Municipal Utility District	Various	N/A	1.0¢/kWh	1997	From "grid-based renewable resources"
Southwestern Public Service	Wind	700 kW	3.0¢/kWh	1998	Another 500 kW may be added
Traverse City Light and Power	Wind	0.6 MW	1.58¢/kWh	1996	Built dedicated wind turbine
Tri-State G&T	Small Hydro (initially)	—	2.5¢/kWh	1999	RFP for additional renewables
United Power Association	Wind	—	—	1997	Not finalized
West Texas Utilities	Small Hydro	1.2 MW	2.0¢/kWh	1997	Existing small hydro
Western Resources	Wind	1.5 MW	—	1998	Two 750-kW turbines; pricing not developed
Wisconsin Electric Power	Wood/Hydro Wind	5.0 MW 1.2 MW	2.04¢/kWh	1996 1998	Wholesale purchases New wind project
Wisconsin Public Service	PV	24 kW	$1.40/kWh	1998	Plant will be built with sufficient participation

Green Pricing Program Summaries

Arizona Public Service—APS established a solar tariff to develop as much as 400 kW of "centralized photovoltaic systems" for its SolarPartners program. The power is being sold in 100-watt capacity blocks at $3.00/block/month. The program costs are being partially subsidized with a grant from the Utility PhotoVoltaic Group (UPVG). The program is open to all APS customers.

The first project was built in Flagstaff. The initial customer response well exceeded the utility's target and the project was expanded from 41 kW to 82 kW. APS then announced plans to expand the program statewide and has constructed a second 82-kW PV project at an existing power plant site in Tempe.

APS is now exploring the construction of several new solar plants in response to continued high levels of customer and community interest. The utility has committed to three additional plants in Flagstaff, Glendale, and Scottsdale. Future plans include facilities in Yuma and Prescott Valley. The new projects will involve partnerships with the host cities.

City of Alameda—The City of Alameda Bureau of Electricity will offer a green pricing option to its electricity customers beginning in the Fall of 1998. Alameda, which already obtains more than 75% of its power resources from renewable energy sources, will offer a "New Renewables Option," under which customers can support "investment in future renewables or new investments for upgrades and retrofits for existing renewable sources." The Bureau already offers a net metering program to customers with rooftop solar systems

Austin Energy—The City of Austin's municipally owned electric utility, Austin Energy, offers customers the opportunity to purchase 50-watt increments of power from photovoltaic systems to be installed in different types of applications. The monthly premium is $3.50 per 50-watt block. The utility changed the block size from 100 watts because some customers felt that the original premium, at $7.00 per block per month, was too high, and to make the program accessible to a larger customer base.

In August 1998, Austin Energy dedicated its first project, a 32-kW system that provides shaded parking at a local "Park and Ride." The 640, 50-watt blocks of power are subscribed by more than 450 customer participants. The utility is planning two additional projects: a 10-kW installation that will be located at a city library and a 111-kW system at Austin-Bergstrom International Airport. The Austin Energy program was developed under the UPVG TEAM-UP (Technology Experience to Accelerate Markets in Utility Photovoltaics) PV Friendly Pricing program.

Bonneville Power Administration—BPA offers a green power product to its wholesale customers consisting of a portfolio of four renewable projects (two wind and two geothermal). Among the key selling points of the package are a 20-year guaranteed price stream, the provision of transmission and load "shaping" services, and the ability to buy as much or as little of the product as desired.

The first BPA customer to sign up for the service was Salem Electric Cooperative, which will purchase 7 average megawatts (aMW) of capacity at a price of 3.5¢/kWh (a premium of 1.0¢/kWh). The power will come from BPA's 15-MW purchase share of PacifiCorp's 41.4-MW Wyoming wind project.

BPA signed an agreement with the Environmental Resources Trust (ERT), an independent, nonprofit organization founded with the help of the Environmental Defense Fund, to broker BPA power products that have environmental benefits. The products include incremental power generated from federal hydro facilities during fish recovery operations, power generated from renewable energy projects, and power from instream flow improvements enabled by ERT water purchases. Acting as a broker, ERT will offer this power to BPA's wholesale customers whose alternative sources are more expensive or who are willing to pay more for environmentally beneficial energy. Proceeds from the sales will be invested in fish and wildlife and other environmental projects.

Central and South West—CSW has developed the "Clear Choice" green pricing pilot program for residential customers. For $5, $10 or $20 more per month on their electric bill, customers can choose to have 250 kWh, 500 kWh, or 1,000 kWh, respectively, of traditional generation replaced by hydropower electricity produced in Texas. The pilot program was introduced in San Angelo, Texas, in October 1997 and CSW plans to offer the Clear Choice program throughout its system in 1998 (see also West Texas Utilities summary).

The development of the green pricing program is a direct result of a Deliberative Polling™ process in which a representative sample of customers overwhelmingly supported further development of renewable resources. More than 80% of customers indicated a willingness to pay at least $1.00 more per month for the companies to acquire more renewable resources. Some customers indicated a willingness to pay as much as $10.00 more per month.

Colorado Springs Utilities—Colorado Springs Utilities has signed a contract with Public Service Company of Colorado for the purchase of 500 kW of wind power through PSCo's WindSource program to sell to residential and commercial customers. Utility surveys indicated that some customers want the utility to pursue clean energy for environmental reasons and to gain experience with new technologies. The utility quickly sold out 900 registrations and has established a waiting list for the wind energy, which it is selling at a premium of $3.00 per 100-kWh block (see also PSCo summary).

Cooperative Power—CP, a generating and transmission cooperative that provides electricity to 17 member distribution cooperatives in southern and western Minnesota, is implementing a program to procure wind energy for its distribution members to sell in green pricing programs. As of June 1998, 13 member coops are participating, with more than thirty-six hundred 100-kWh blocks subscribed. As a result, CP has contracted for nearly 2 MW (three 660-kW turbines) of new wind power. The project, to be located in southwestern Minnesota, should begin operating by the end of 1998. CP recently lowered its wind power premium from a range of $3–$4 per block to $2 per block because of the availability of a state production incentive.

Dakota Electric Association—The Minnesota PUC approved a tariff filing by Dakota Electric to offer its customers a wind energy purchase option. The power will be supplied by Cooperative Power, Dakota Electric's wholesale supplier. Under the program, customers can purchase 100-kWh blocks of wind-generated electricity at a proposed rate premium of $2 per block. A 12-month subscription commitment is required (see also Cooperative Power summary).

Detroit Edison—In 1995, Detroit Edison developed a green pricing program to support the installation of centrally located PV projects. Customers pay for 100-watt blocks of capacity rather than for the electricity generated. The monthly premium is $6.59 per block. The first 28.4-kW project, installed in 1996, was cost-shared by UPVG and is fully subscribed with 195 participating customers and a waiting list of 40 customers. On average, participants have increased their monthly bills by $10.75 (17.2%), with an average subscription of 145 watts of PV capacity.

The Michigan Public Service Commission (PSC) approved an expansion of the program in July 1997. In October 1997, Detroit Edison dedicated a second solar electric facility (26.4 kW). The utility also expanded the program to include commercial customers. Six area businesses have committed to participate in a new program that will donate solar-generated electricity to Southeastern Michigan school districts. Participating school districts will also receive a 2-week solar and renewable energy curriculum.

Detroit Edison was the winning bidder of the Maryland Energy Administration's RFP for installation of solar power systems at as many as 10 Maryland schools. Contributions will be solicited from Maryland citizens and businesses to help pay for the systems.

Florida Power and Light—Pursuant to a settlement agreement with the Legal Environmental Assistance Foundation, FP&L will develop a green pricing program to support construction of PV systems. FP&L has started marketing the "Solar Research Partnership" and will determine the project size based on customer interest; initial plans are to develop a 10-kW PV unit at one of its power plants. Customers will be able to designate specific dollar contributions with their monthly utility bill.

Fort Collins Light and Power—Approximately 700 residential and small-business customers subscribed to a pilot program that offers wind energy at a premium of 2.0¢/kWh. Based on these customer commitments, the Colorado utility contracted to purchase power from two 600-kW wind turbines that began generating power in April. The project is located in Medicine Bow, Wyoming. Residential subscribers are required to purchase all of their power from wind, while commercial customers can purchase the wind power in 1,000-kWh blocks.

Gainesville Regional Utilities—On January 11, 1997, GRU completed a 10-kW PV demonstration project at the utility's Electric System Control Center. The project was funded by community donations and with grants from the Florida Energy Office and UPVG. GRU garnered community support for the project through its monthly customer bulletin and inserts in the local newspaper. More than 600 customers contributed to the project over a 3-year period.

Gulf Power—Gulf Power implemented a schools-based solar program under which a variety of solar energy technologies will be installed at public schools using utility customer contributions leveraged with utility funding. The program seeks to offset conventionally generated electricity and to increase community awareness of renewable energy technologies.

Hawaiian Electric—HECO developed a program with a minimum goal of installing 20 kW of PV systems on public school facilities. Customers can make voluntary monthly fixed-dollar or lump-sum contributions at any time. HECO will contribute additional funding (a total of $140,000 for 2 years).

More than 2,000 customers are contributing to the program. Ten schools have been selected to receive systems, with four systems already installed.

Holy Cross Energy—Holy Cross, which serves the Roaring Fork Valley in Colorado, is marketing a program under which its customers can purchase 100-kWh blocks of wind energy at a rate premium of 2.5¢/kWh. Holy Cross is a wholesale customer of PSCo and will purchase wind power from PSCo's Colorado wind project.

As of May 1998, the utility had garnered subscriptions from 850 residential and commercial customers for a total of eighteen hundred, 100–kWh blocks of wind power, which is enough to cover the first megawatt of a planned 2.75–MW purchase. Holy Cross will begin marketing a 750–kW block of wind power in the summer of 1998 and an additional 1 MW in the future. The City of Aspen has committed to purchase 500 blocks, which is equivalent to about one-third of the city's electricity use. The Community Office for Resource Efficiency is assisting the utility with customer recruitment (see also PSCo summary).

Indianapolis Power and Light—IPL won approval from the Indiana Utility Regulatory Commission to offer customers three new pricing options, including a green power purchase option. The Elect Plan[SM] Green Power Program is open to all of IPL's residential and commercial customers with less than 2,000 kW of monthly demand. IPL has issued an open-ended RFP for renewable energy resources of 5,000 kW or less in size to supply the program. IPL is currently evaluating small hydro and methane gas resource options. Initially, the green power is being supplied with purchases of geothermal power from Enron.

Lincoln Electric System—Beginning in April 1998, LES began offering its retail customers an opportunity to purchase units of electric energy generated by a new, 660-kW wind turbine to be constructed northeast of Lincoln, NE. The power is offered to customers in 100-kWh units at a price of no more than $6 per unit—an average Lincoln home uses about 1,000 kWh per month. Customers begin paying for the project upon sign-up.

As of September 1998, LES had 3-year commitments from 1,381 customers to purchase a total of 1,973 "units." LES is billing customers at $4.30 per unit based on the expectation that the publicly owned utility will receive a Renewable Energy Program Incentive from the U.S. Department of Energy. Groundbreaking for the turbine will take place in October with operation beginning in 1999.

Los Angeles Department of Water and Power—The board of the LADWP unanimously endorsed two new programs that will provide customers with green power choices. "The Green Plan" will offer residential customers the option to purchase 20% or more of their electricity from new renewable resources at a small price premium (from $2 to $5 per month). Commercial and industrial customers can also participate "by adding a minimum to their total energy bill for green resources."

"The Pure Solar Program" will allow up to 1,000 residential customers to install PV systems on their rooftops. The PV rooftop systems will be partially subsidized with public benefits funds collected by LADWP under California's electricity restructuring law and will be available to customers at a rate premium of no more than 20%.

LADWP will match the premiums paid under the two green power programs with “Green Rewards” that can be redeemed with purchases of energy efficient appliances. The resulting bill savings will “more than offset” the premiums that customers will pay for the green power.

Pursuant to the green power program announcement, LADWP released a request for proposals (RFP) for "a combination of renewables generation resources equivalent to approximately 100 megawatts with a capacity factor of 25 percent." Proposals are being sought for new sources of renewable energy as (1) green power, (2) a grid-intertied commercial rooftop PV system, and (3) a large quantity of solar water heaters. LADWP expects to initially contract for 20 MW of generation, with options to increase to the full 100 MW depending on customer response.

Madison Gas and Electric—In October 1997, MGE announced plans to construct, own, and operate an 11.25-MW wind farm in eastern Wisconsin. The wind power will be offered for sale in 100-kWh blocks to residential and business customers. MGE expects the price premium to be approximately $4–$5 per block.

Moorhead Public Service—In May 1998, MPS (MN) announced that it signed up more than 400 residential and commercial customers to participate in its "Capture the Wind" green pricing program. Based on this response, the utility will construct a 750-kW wind turbine that is expected to be operational by June 1999. More than 100 other customers have been placed on a waiting list; MPS serves 13,000 customers in total. Residential customers are required to participate in the program for 3 years and can purchase either all of their electricity or blocks of 1,000 kWh per month from wind at a premium of 0.5¢/kWh. Commercial customers will pay the same premium and can purchase power in blocks of 1,500 kWh per month.

Nevada Power—NPC won approval from the Nevada Public Utility Commission for a program that will allow residential and commercial customers to round up their monthly bill or designate a flat monthly contribution for the utility to develop PV systems. NPC proposes to construct as many as forty-six 20-kW PV systems over a 10-year period, with an initial commitment to two systems, one in 1998 and one in 1999.

New York State Electric and Gas—NYSEG, a participant in the TEAM-UP PV Friendly Pricing program, installed two residential PV systems in September 1996. Participating customers pay a subsidized premium that is capped at $10 per month. The utility plans to install three additional residential systems in 1998. Currently, NYSEG has no plans to expand the project beyond the research and development (R&D) stage.

Northern States Power—NSP installed seventeen 2-kW PV systems on residential rooftops, for which participating customers must pay a $50 monthly charge for 5 years. After 5 years, the homeowner can sign another 5-year contract, purchase the system outright for $3,000, or have NSP remove the system. After 10 years, the homeowner can purchase the system for 1 dollar. Excess electricity generated is fed back into the grid under a net-metering arrangement. More than 270 customers applied for the program in 1996, which was cost-shared with UPVG.

Portland General Electric—PGE has suspended its marketing efforts for a green tariff for large wholesale and industrial customers, although the tariff remains available to customers. PGE had planned to package power from two proposed wind projects for sale to wholesale customers at a premium of about 1¢/kWh above the regular rate.

Public Service Company of Colorado—PSCo established one of the first green pricing contribution programs in 1994. Approximately 15,000 customers contribute to the Renewable Energy Trust, either through fixed contributions or using a bill "round up" option. Through the Trust, PSCo has deployed about 15 kW of off-grid PV systems.

During 1997, PSCo added two new green pricing options for its customers. The WindSource program offers customers an option to subscribe for 100-kWh blocks of electricity from a new wind project at a rate premium of 2.5¢/kWh. As of June 1998, 13.3 MW of wind energy had been subscribed by more than 7,300 residential, business, and wholesale customers. The breakdown of subscriptions by customer type is: 9.05 MW - residential; 2.0 MW - commercial; and 2.25 MW - wholesale customers. Among the utilities that will purchase wind energy at wholesale from PSCo are Holy Cross Energy and Colorado Springs Utilities. The first of seventeen 700-kW turbines began feeding power to WindSource subscribers in April from a site in northeastern Colorado; the remaining turbines will be operational by the end of 1998.

PSCo's SolarSource program offers customer-sited PV systems at a subsidized system cost of $4.00/watt. Initially, PSCo will make as many as 20 systems available, with plans to install 200 rooftop systems by 2001.

Sacramento Municipal Utility District—Since 1993, SMUD has operated the PV Pioneers program under which customers can choose to pay a $4.00 flat monthly fee (for 10 years) to have a 2-kW to 4-kW, grid-connected PV system installed on their rooftops. SMUD installs, operates, maintains, and owns the hardware. More than 400 residential and 20 commercial systems have been installed under the program. Although total installations have been limited to approximately 100 systems per year, SMUD receives approximately 1,000 new applicants annually.

In June 1997, SMUD announced the PV Pioneers II program, through which customers can purchase PV systems and sell excess electricity back to the utility. SMUD will "buy-down" half of the $17,000 system cost.

Looking toward the competitive retail market in California, SMUD developed a new "green rate" that will allow its customers to obtain all of their electricity needs from renewable sources; SMUD already meets nearly half of its power needs with renewables. SMUD's "Greenergy" allows customers to choose to receive 100% of their power from renewable energy sources for an additional rate charge of 1.0¢/kWh or to choose a 50% renewables service for an additional 0.5¢/kWh. Initially, SMUD will purchase power from a new 8.3–MW landfill gas plant to supply the program. A "Community Solar" program allows customers to contribute 1.0¢/kWh for the purchase and installation of photovoltaic systems on schools, churches, and other community facilities. As of September 1998, more than 4,500 customers had signed up for the Greenergy program, representing about 1% of total residential customers.

Salt River Project—SRP provides a solar energy purchase option to its customers from a 100-kW, single-axis tracking photovoltaic plant that is being constructed at its Santan Power Plant in

Gilbert, AZ. Dubbed the "Solar Choice Program," SRP customers can purchase 100-watt blocks of power from the project for $3.00 per month. Customer purchases are limited to three blocks of power. The customer funds will be supplemented with a UPVG grant.

In the first month of marketing, 1,900 customers requested about 2,900 power blocks, easily meeting the 1,000 block commitment necessary to fully subscribe the 100-kW plant. As a result of the large response, SRP has decided to construct a second solar plant.

Southwestern Public Service—SPS has issued an RFP for a 700-kW wind turbine that will provide power for New Mexico's first green pricing program. The program is a condition of PUC approval for a 200-MW gas turbine installed in 1997. The wind power will be sold at a premium of $3.00 per 100-kWh block. If enough customers sign up for the program, SPS will install an additional 500 kW of wind.

City of Tallahassee—Pursuant to a settlement agreement with the Legal Environmental Assistance Foundation, the City of Tallahassee is developing a green pricing program that will utilize PV technology. Tallahassee will match customer contributions of as much as $250,000 to install a 10-kW solar PV system on or near a city building.

Tennessee Valley Authority—TVA issued a request for proposals for green power that it hopes to deliver to customers beginning in 2002**.** The amount of green power purchased will depend on the level of customer interest expressed, but TVA estimates that it could purchase up to 300 MW. The RFP defines green power to include only solar, wind, biomass, and geothermal resources, and though existing resources will be considered, preference will be given to new resources.

Traverse City Light & Power—Since 1996, Traverse City (Michigan) has operated a green pricing program for its residential and small commercial customers under which a 600-kW wind turbine was developed. Residential and commercial customers pay a 1.58¢/kWh premium to purchase 100% of their power from wind energy; the premium represents a 17%–25% increase in the average monthly bill. There are 145 residential and 26 commercial customer participants, representing 3.1% of the total customer base. An additional 79 customers are on a waiting list. As of May 1997, no customers had dropped out of the program.

Tri-State G&T—In June 1998, the board of directors of Tri-State Generation and Transmission Association approved the development of a renewable resource power program designed to make "green power" available to its member distribution systems by Jan. 1, 1999. Tri-State is a wholesale supplier of electric power to 32 rural electric systems in Colorado, Wyoming, and Nebraska.

Initially, Tri-State will obtain the power from small hydro projects, which is power that it already purchases for resale to its members. The power will be sold in 100 kWh/month blocks at a "small" rate premium. In September 1998, Tri-State released a request for proposals (RFP) for green power to supply the program. The RFP solicits proposals for sales in the range of 200 to 5,000 megawatt-hours monthly, with options to purchase more as demand for renewable resource power increases.

United Power Association—UPA, a generation and transmission cooperative based in Elk River, Minnesota, is planning to offer a wind power product to its 12 member distribution

cooperatives for sale to their customers. The wind power would be sold in 100-kWh blocks in a 1-year test program. UPA is negotiating to buy the wind power from NSP.

West Texas Utilities—WTU, a regulated utility subsidiary of Central and South West Corporation, announced a pilot program to offer residential and small business customers in San Angelo, Texas, an option to purchase power from an existing 1.2-MW small hydro project. Participating customers pay a premium of 2¢/kWh for the renewable electricity and can subscribe for fixed monthly blocks of 250 kWh, 500 kWh, or 1,000 kWh. As of September 1998, the program had 165 customer subscribers, equivalent to about 0.5% of eligible customers. (see also CSW summary)

Western Resources—Western Resources is the first Kansas-based utility to announce a green pricing option. The utility will start the program with two 750-kW wind turbines, to be installed by the end of 1998, with the possibility of expanding the project to as large as 50 MW if customer interest is strong enough. Product pricing has not yet been established.

Wisconsin Electric Power—Wisconsin Electric offers an optional renewable electricity service to residential, farm, and small commercial customers from sources procured by the utility in the wholesale power market. Customers can choose to receive 25%, 50%, or 100% of their power from renewables at a premium of approximately 2.0¢/kWh. The renewable power provided for the first 2 years of the project came from existing hydro and biomass projects for a total of 5 MW of renewables supply.

Wisconsin Electric has issued two RFPs for additional green resources focusing on in-state suppliers and also announced that it will build two 600-kW wind turbines scheduled to be operational by June 1999. As of March 1998, 6,800 customers were participating in the program with a dropout of only 6%. Wisconsin Electric believes that its program represents a good test of the forthcoming competitive market for green power services, which the company believes may represent as much as 10% of the future electricity market.

In 1996, Wisconsin Environmental Decade (WED) filed suit against the Wisconsin PSC to block implementation of Wisconsin Electric's green pricing program. WED alleged that the PSC violated state law in approving, without a hearing, the green rate premium. WED also challenged the lack of a competitive acquisition process for the renewable resources. In March 1998, the parties reached a settlement. Under the agreement, at least 75% of the resources marketed under the program will come from new renewable resources located in Wisconsin and Upper Michigan by April 1, 2000. The agreement also stipulates that no one energy source will account for more than 75% of the program's portfolio and that a major marketing effort will be undertaken to engage commercial and industrial customers.

Wisconsin Public Service—WPS has added two new programs to give its customers more ways in which to support renewable energy development. Under the Renewable Electric Rate, customers can purchase one or more 5-kWh units of solar electricity each month. When enough customers have enrolled in the program, WPS will build a 24-kW solar-electric plant. Under the Round-Up for Renewable Energy option, customers round-up their electric bill with the funds to be used toward the installation of small PV lighting or water-pumping systems for parks, zoos, nature centers, and other public areas. These programs are administered by the WPS Community Foundation, a nonprofit educational foundation.

The WPS SolarWise for Schools program resulted in three 12-kW PV system installations at local high schools in 1996, with funding coming from a combination of 2,600 customer participants, the company's R&D budget, and the UPVG TEAM-UP program. The average customer contribution is $1.70 per month. Three additional school projects were undertaken in 1997 and seven other schools will receive curriculum packages designed for students to study renewable energy resources.

WPS also plans to install four residential PV test systems in the summer of 1998, leading to the possible launch of a residential rooftop PV program.

Competitive Green Power Marketing

In addition to utilities that offer green pricing programs, a number of companies are selling green power in states where the retail electricity market has been opened to competition. Green power marketers have also participated in retail access pilot programs in Massachusetts, New Hampshire, and the Pacific Northwest. The following section provides information on these green power providers.

Automated Power Exchange—APX is a fully automated electricity exchange through which sellers and buyers can make power transactions in the California electricity market. As an alternative to the California Power Exchange, the APX offers the APX Electricity Market and the APX Green Power Market.

Under the APX Green Power Market, renewable energy producers are matched with Electric Service Providers (ESPs) that want to sell "green" power to customers, eliminating the need for specific, bilateral contracts. Suppliers wishing to sell into the APX Green Power Market must be registered with the California Energy Commission as "Renewable Suppliers." Only energy provided from wind, solar, geothermal, biomass, landfill gas, and small (less than 30 MW) hydropower plants may be sold into the APX Green Power Market.

***All*Energy Marketing Company**—In May 1997, *All*Energy Marketing Company, a joint venture formed by New England Electric System and Eastern Enterprises, announced the formation of a new division, **ReGen^{SM} Technologies**, offering environmentally preferable electricity services. ReGen was formed to facilitate the development of new renewable generation projects using clean technologies such as wind and solar to supplement existing regional resources.

The ReGen renewable power “upgrade” service is the first renewable energy product offered to New England customers in the competitive electric marketplace. ReGen upgrades the environmental quality of the electricity used by the customer, without requiring the customer to switch electricity providers. Residential and small commercial customers can purchase blocks of renewable service at a premium of $8 per block per month for the first block and $6 for all subsequent blocks—one block equals approximately 30% of the average customer's electricity use. Large commercial and industrial customers can purchase the service on a per kWh basis. In the first year, A*ll*Energy will supply renewable power from a new landfill gas project, but plans to add PV and wind to the mix in the future.

While the ReGen service is available to all electricity users in New England, A*ll*Energy is initially focusing its marketing efforts in Massachusetts and Rhode Island. The Union of Concerned Scientists has signed up as a charter customer for the service. The company plans to target other markets nationwide as customer choice is adopted.

Bonneville Power Administration—BPA has teamed with three environmental groups to form the Bonneville Environmental Foundation. The groups have agreed to endorse power generation from "select, environmentally preferred resources," which BPA will market at a price premium. Initially, two hydropower projects will provide 20 aMW of power to the program. Power from new wind and geothermal projects will also go into the pool. Retired U.S. Senator Mark Hatfield will be the foundation's president.

Calpine Corporation—In 1998, Calpine Corporation, of San Jose, California, purchased a 72-MW geothermal power plant from the Sacramento Municipal Utility District (SMUD). SMUD will purchase 50 megawatts of electricity from the plant through 2001 at market prices, plus a renewable power premium. Calpine will sell electricity not committed to SMUD into California's green power market.

cleen 'n green—cleen 'n green, a new Energy Service Provider (ESP), recently announced three green power products for the California electricity market. "green 100" offers 100% in-state renewable power, while "green 50" offers 50% in-state, renewable power and 50% in-state, non-renewable power. The third product, "cleen 100," offers 100% in-state non-renewable power. Initially, the renewable power will be supplied by geothermal and landfill gas projects, but the company hopes to diversify this mix in the future. The non-renewable power will come from large hydro and natural gas resources. According to the company, the premiums for these products range from 5% for "cleen 100" to 20% for "green 100." The company has committed to donate a percentage of its profits to develop new renewable energy resources in California.

Conectiv Energy—Conectiv Energy of Wilmington, DE is offering two green power products to customers in the competitive Pennsylvania power market: Nature's Power 100, which comes from 100 percent renewable electricity resources, and Nature's Power 50, which comes from 50 percent renewable and 50 percent non-renewable sources. Both products have been certified by the Green-e program.

Edison Source—Edison Source, a subsidiary of Edison Enterprises, will offer California customers an option of purchasing either half or all of their power from renewables, which will include solar, wind, small hydro, biomass, and geothermal resources. According to the company, the 50% option will cost approximately the same as 1997 customer electricity rates,[5] while those who choose 100% renewable energy will pay approximately 15% more, or about 2¢/kWh. In July 1997, Edison Source issued an RFP for suppliers of renewable electricity resources, requesting pricing and capacity information for renewables specified under guidelines issued by the California Energy Commission (solar, wind, geothermal, small hydro, biomass, and landfill gas).

In April 1998, Toyota Motor Sales (TMS), the fourth largest auto company in the United States, announced that all of the electricity for Toyota's U.S. headquarters and several other California facilities, approximately 38 million kWh per year, will be supplied by Edison Source's EarthSource^{SM} 100 product.

Electric Lite—Electric Lite, a South Carolina-based power company, provided residential and commercial service in Portland General Electric's Customer Choice pilot, including the "Electric Lite Green," a green power option. Foresight Energy supplied the green power, which was made available to four Oregon cities at a premium of 1¢/kWh. The resource mix reportedly consisted of 26% existing geothermal, 25% new landfill gas, and 25% existing hydro, with the remaining 24% from natural gas, oil, coal, and nuclear resources. In July 1998, Electric Lite stopped marketing to customers in the PGE pilot, saying that they could not justify continued marketing unless the program was expanded to provide more customers. The move left no companies to market alternative service options to residential customers.

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5 By law, California ratepayers were guaranteed a 10% rate cut when direct access began in 1998.

Enron Energy Service—After conducting an aggressive marketing campaign in late-1997, Enron suspended its efforts to market alternative electricity services to the residential sector in California and other states. An Enron spokesperson cited an inability to provide significant discounts to customers as the primary reason for withdrawal from the California market.

Previously, Enron had competed in selected retail natural gas and electricity marketing pilots, including the New Hampshire pilot. In California, Enron was marketing Earth Smart^{SM} Power, an electricity product containing 50% renewables, with the balance guaranteed not to come from coal, nuclear, or petroleum sources. EES will still supply power to customers who signed up for Earth Smart Power prior to the suspension of marketing and will continue to market to commercial customers. In July 1998, Patagonia, a Ventura, California-based outdoor clothing manufacturer, announced that it will purchase 100% renewable energy from Enron to power its 14 California facilities. Enron will supply the power from a new 16-MW wind power facility that is being constructed near Palm Springs, CA.

The suspension of marketing does not affect the existence of Palm Springs Energy Services (PSES), an alliance between the City and FirstPoint California, a subsidiary of Enron. PSES offers Palm Springs residents and businesses several electricity service choices, including Enron=s Earth Smart green power option.

Environmental Resources Trust—ERT is an independent, non-profit organization founded with the help of the Environmental Defense Fund, that brokers "electric power sources that offer clear and demonstrable environmental benefits." ERT has signed an agreement with the Bonneville Power Administration (BPA) to broker BPA environmentally beneficial power products, including unscheduled power generated from federal hydro facilities as a result of fish recovery operations, power generated from renewable projects, and power from instream flow improvements enabled by ERT water purchases. Proceeds from the sales will be invested in fish and wildlife and other on-the-ground environmental projects.

Foresight Energy—Foresight Energy Company, based in Oakland, California, creates wholesale clean energy products for electricity retailers and utilities. Through its brokerage arrangement with Enron Capital and Trade Resources Corporation, Foresight assembles portfolios of clean energy resources, arranges transmission, and schedules delivery of the power.

In September 1997, Foresight announced a working agreement with Northwest Environmental Advocates (NWEA), a Portland, Oregon—based environmental advocacy group, to develop its Ecopower™ electricity service for sale in the Pacific Northwest. Foresight plans to offer Ecopower™ to customers in Oregon, California, Massachusetts, and Rhode Island through a number of electricity retailers.

Green Mountain Energy Resources—In August 1997, Vermont-based Green Mountain Power Corporation (GMP) and the Wyly Family of Texas announced the formation of a new company, Green Mountain Energy Resources (GMER), that will "create a retail brand of electricity and natural gas that will be sold to consumers who care about the environment in competitive markets across the nation."

In October 1997, GMER announced a deal with Oregon-based PacifiCorp to be its first wholesale supplier of energy in California. GMER's energy products will feature renewable energy, including small hydro, geothermal, and biomass power that PacifiCorp will supply.

GMER and PacifiCorp will work together to identify environmentally sensitive energy sources for customers.

Also in October, GMER announced three electricity products for the California market:

- "75% Renewable Power"— a power blend of 75% "eligible renewables" and 25% from large- scale hydro and system power

- "Water Power"— a power blend of 90% hydropower generated from a mix of large- and small- scale hydro facilities and 10% system power.

- Wind for the Future[SM] through which one new wind turbine will be built for every 3,000 customer subscribers. Power from the newly constructed wind turbines will account for 10% of the energy, with the remainder supplied by the "75% Renewable Power" product.

In April 1998, GMER and NGC Corporation announced an agreement under which NGC will supply wholesale power for a large portion of GMER's retail electric business in California. NGC will supply power for two of GMER's three green power products: the "Water Power" blend and the "75% Renewable Power" blend. The power will come from various generating facilities in California and the western region, including small hydro, geothermal, and biomass power. The NGC agreement complements the pre-existing power supply agreement with PacifiCorp.

In July 1998, GMER launched Green Mountain Solar, offering rooftop photovoltaic systems for California homeowners. The rooftop systems will enable residential customers to produce between 20% and 50% of their total electricity needs. The remainder of the power will be supplied by GMER or the supplier of the customer's choice. Because of subsidies available in California, the PV system costs will be reduced by at least one-half from typical market prices. Participants can also take advantage of California's net metering law, which credits excess solar electricity generated at the retail rate.

GMER has developed three green power products for the Pennsylvania market: Eco Smart[SM], Enviro Blend[SM], and Nature's Choice[SM]. Two of the three products have been certified by the Green-**e** program as containing at least 50% renewables content. Beginning January 1, 1999, two-thirds of Pennsylvania's electricity customers will be able to choose their electricity supplier.

GMP is also a participating supplier in the New Hampshire electricity pilot program, offering customers a "green" electricity service consisting of 97% existing hydro (from Hydro Quebec), 1.5% natural gas, and 1.5% nuclear resources.

PacifiCorp—PacifiCorp is a registered energy service provider in California and has had two wholesale products certified by the Green-**e** program, but has not announced a retail green power offering. PacifiCorp has an agreement to provide green power to Green Mountain Energy Resources for its California retail offerings and will be supplying green power to Clark Public Utilities. A PacifiCorp subsidiary has also registered as a service provider in Pennsylvania, but does not offer a green power product.

PG&E Energy Services—In March 1998, PG&E Energy Services announced Clean Choice[TM], a line of environmentally-friendly electricity products that the company will market to residential customers in California. Customers can purchase 20%, 50%, or 100% of their power from

renewable resources including solar, wind, geothermal, biomass and small hydro sources, with any remaining electricity to come from traditional large hydropower. The marketer has committed to supply a portion of the 50% and 100% options from new renewable resources to be built over the next 12 to 18 months.

Working Assets Green Power—WAGP is a retail power marketing company that participated in both the New Hampshire and Massachusetts retail access pilot programs. In both pilot programs, WAGP marketed its power as being non-coal, non-nuclear, and non-Hydro-Quebec. The company contracted with New England Electric System to provide its power supplies. The contract provides that WAGP purchase power from 11 specified power plants consisting of a mix of hydroelectric, oil-fired, and gas-fired generation. The company also donates 1% of its electricity income to environmental groups in each state.

WAGP registered as an energy service provider in California but decided not to offer a retail electricity service because of the stranded asset provisions of California's restructuring law. WAGP has endorsed Green Mountain Energy Resources as its power provider of choice in California. GMER has agreed to donate 1% of its electricity revenue from customers referred by Working Assets to environmental groups working in California through the Working Assets donations process.

Other California Providers—Several other marketers have announced plans for green power offerings in the California market. Among them are Friendly Power Corporation (Eco-Friendly products), Keystone Energy Services (Earth Choice 50 and 100), Omni Electric Company (100% renewables product for commercial customers), Powercom Energy & Communications Access Inc. (seven products), and PowerUSA (Cleanearth 50 and 100).

Related Organizations

California Energy Commission—The CEC manages the $540 million renewables fund that was established in California's restructuring legislation to help renewable energy producers compete in the new competitive electricity market. A portion of the fund will be used to provide "Customer Credits" to consumers who purchase eligible renewable power. Through this program, a customer's electricity bill can be credited up to 1.5 cents for each kilowatt-hour of renewable electricity purchased. The CEC has also established a list of registered California renewable energy service providers whose products qualify for the rebate.

Corporation for Solar Technology and Renewable Resources—CSTRR is a not-for-profit corporation created to pursue solar power and other renewable resource development opportunities in Nevada and the Southwest. CSTRR's power market development strategy is aimed at federal facilities, public facilities, Native American Tribal councils, and various commercial customers. CSTRR has established an initial aggregate market target of 100 megawatts.

Green-e Program—In concert with green power marketers and consumer and environmental stakeholders, the Center for Resource Solutions has launched the country's first voluntary certification and verification program for environmentally preferred electricity products. The program's centerpiece—the Green-**e** logo—helps consumers easily identify products that contain at least 50% renewable electricity content. The Green-**e** program is currently active in the California and Pennsylvania electricity markets, and is also being considered in New England.

Participating companies pledge to authenticate the renewable content of their electricity products, abide by a code of conduct governing their business practices, and provide customers with regular information about the sources of the electricity that they purchase. In addition to power marketers, companies that purchase significant amounts of Green-**e** certified power will be eligible to use the Green-e logo in marketing and advertising materials. Both Toyota Motor Sales USA and Patagonia have been approved to use the Green-**e** certification seal.

National Association of Attorneys General—Noting problems with defining what type of power can and should be labeled as "environmentally friendly," NAAG established a task force to recommend language requiring disclosure when green power or marketing claims are used by electric utility providers. While taking no position on the environmental benefits of different types of power sources, the attorneys general emphasized that every state should ensure that consumers understand the exact nature of any green power marketing claims.

In July 1998, NAAG released a first draft of the "Green Guidelines for Electricity" for public comment. The guidelines are intended for use by industry and law enforcement agencies to clarify how environmental marketing claims can be made in a non-deceptive manner. The draft document is offered as a starting point for interested parties who may wish to consider establishing uniform advertising standards for the "green marketing" of electricity and what those standards should be.

Natural Resources Defense Council—Based on an independent evaluation of the green power products currently being marketed in California, NRDC has identified six green power products as environmentally preferable. The six products are: Edison Source's EarthSource 2000^{SM},

Green Mountain Energy Resources' Wind for the Future[SM], PG&E Energy Service's Clean Choice 50 and Clean Choice 100, and SMUD's Greenergy Community Solar and Renewable Energy Option, the latter two of which are only available in SMUD's service territory. NRDC notes that these products "have substantially lower environmental impacts than the current California mix, and represent the 'greenest' power options currently available."

Renewable Energy Alliance—Seven green power marketers have formed the Renewable Energy Alliance to pursue a common agenda to address regulatory issues and undertake market-building activities in support of green power. The founding members are *All*Energy Marketing Company, Enron, Foresight Energy, Green Mountain Energy Resources, PacifiCorp, PG&E Energy Services, and Edison Source. The group is working to support policies and regulations that establish fair market structures for environmentally preferable power sources and that foster the use of accurate environmental claims in the promotion of differentiated power products.

Renewable Energy Marketing Board—A new group, the Renewable Energy Marketing Board (REMB), has been formed to promote renewable energy in California's competitive electricity marketplace. The nonprofit group will work to advance certified renewable energy products and services, and to educate electric customers on the advantages of customer choice to ensure a sufficient consumer demand for renewables-based power sources. The REMB is open to renewable energy generators and marketers, nonprofit groups, regulatory agencies, and individuals.

Retail Access Pilot Programs

Retail customer choice pilot programs are underway or planned in several states and utility service territories. The following is a short description of pilot programs that offer or will offer green power options.

Clark Public Utilities—Clark Public Utilities (Washington) announced a pilot program, Powerful Choices, in which 6,200 customers (2% of the customer base) will be able to choose the source of the electricity they purchase. The four power supply options offered include: (1) the current mix, (2) power from the Bonneville Power Administration, (3) green power, and (4) a market-priced option. Under the 12-month pilot that starts in March 1998, customers can choose to purchase more than one type of power supply, with a minimum of 25% from each source. The green power will come from existing renewables resources supplied by PacifiCorp and may also include wind power from a project under development.

Massachusetts Electric—The MECo pilot is the first pilot to explicitly include green power options in the program design. MECo opened as much as 100 million kWh in four cities to competition; four companies were selected to provide "environmentally sensitive" or "green" service options. Green options included not only generation from renewable resources, but energy efficiency programs, retirement of emissions credits, and donations to environmental groups and projects as well. Overall, 31% of residential and 3% of small business participants chose one of the four green options offered.

New Hampshire—A statewide pilot program was ordered by the New Hampshire Legislature in June 1995 to determine the implications of retail competition in the electric industry. The pilot began in May 1996 and is scheduled to run through April 1998. Approximately 3% of each electric utility's peak load, or a total of about 50 MW statewide, was made available to competition, for which more than 30 power suppliers registered and about 16 competed actively. Although six suppliers used green marketing themes to sell their product, most companies attempted to project an environmentally friendly image rather than substantively work towards the addition of renewable energy resources. Although market share data is not available, 37% of respondents to a survey of customer participants said they were either "strongly influenced" or "moderately influenced" by the environmental message or image of their power supplier.

Pacific Power—In the first phase of Pacific Power's Klamath County (OR) retail pilot program, 15% of participating customers chose a green power service offering from among a portfolio of four different services, including two lower price, market-based offerings. The green power customers are required to pay a 10% price premium for the 100% renewables product, which is a blend of 80% existing geothermal and 20% wind energy that will come from the company's Wyoming wind project. The pilot program, developed to facilitate the transition to full competition, was approved by the Oregon Public Utilities Commission in April 1998 and is scheduled to run through June 1999.

One unique feature of the program is a credit of 0.2¢/kWh for customers who choose renewable power resources such as solar, wind, or biomass. The renewables credit is being offered "to encourage the use of this important, but often more expensive power option."

The Commission also approved direct access choices for schools—including both private and public elementary and secondary schools, colleges, universities, and professional schools—within Pacific Power's Oregon service territory and for its largest industrial customers. Schools

may participate at 100 percent of their electric load, and customers with demand greater than 5 MW can participate for up to 50 percent of their load. Eligible customers will be able to choose a new power source, including a renewable resource option, with the changes taking effect in July. Pacific Power is a retail utility subsidiary of PacifiCorp,

Portland General Electric—PGE offered 50,000 residences and businesses (7.5%) in four area communities the opportunity to choose their electricity provider beginning December 1, 1997. All large commercial and industrial customers will be able to buy as much as 50% of their electricity from competing providers. PGE expects the program to "deliver competitive prices and innovative products, such as the opportunity to buy electricity generated solely from renewable resources." While the Oregon PUC certified 14 energy service providers for the program, only one, Electric Lite, offered a green power product.

PGE developed an energy label for the pilot to help consumers compare power suppliers' generation sources and provide information on emissions from different generation sources. All electricity suppliers that are certified to sell power in the program are required to use the label.

Puget Sound Energy—The Washington Utilities and Transportation Commission approved a 2-year customer choice pilot program for residential, commercial, and industrial customers of Puget Sound Energy. Approximately 85,000 customers (10%) within the pilot program areas will be able to purchase power from other utilities, brokers, and marketers. Although the power suppliers have yet to be selected, Puget is working to inform and educate customers about green power options that may be offered.

Washington Water Power—The Washington Utilities and Transportation Commission (WUTC) approved a pilot program which will offer electricity service choices to 7,800 WWP customers (3%). The pilot, "More Options for Power Service II" or "MOPS II", will run from July 1, 1998 through June 30, 2000 and will provide customers with energy service alternatives without having to change energy service providers. Customers will be able to choose between five energy service alternatives including green resource rates. The WUTC approved several revisions to the pilot, including a change allowing WWP to offer four different renewable resource options—a 25% wood power mix, a 25% wind power mix, a 100% wood power mix, and a 100% wind power mix—instead of the one renewable option originally planned. WWP is currently in negotiations for the wind power, but owns a 45-MW wood waste facility that will supply the wood power. The pricing scheme for these products will be on a per kilowatt-hour basis, rather than a dollar per block basis called for in the original plan.